



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

only the refractory and therefore worthless species will not acknowledge him as master when he treats them like King.

There is therefore a strong argument in favor of the view that cultivated varieties should remain intact indefinitely if conditions for growth remain constantly favorable.—BYRON D. HALSTED, *Rutgers College*.

The Causes of Cypress Knees.—From the teleological standpoint the buttress function of the cypress knees was ably advanced in the last number of the *AMERICAN NATURALIST*, and while reading the article it occurred to me that the swaying of the trunk by winds would unavoidably produce a pulling strain upon roots at any angle with the tree, with a tendency to the elongation of such roots, particularly the outermost ones, and with the rebound or push of the tree in the opposite direction there would occur angularities at the points of greatest stress, in such outer roots, with sap exudation at such angles, and the piling up of indurated tissue in such forms as we find in the "knees." Recollecting that Herbert Spencer had dealt with plant morphology in a general way, I looked up the reference, and believe that his Chapter II., Part V., Vol. II., *Principles of Biology*, covers the subject admirably, especially in the words of Sec. 279: "Many commonplace facts indicate that the mechanical strains to which upright gravity plants are exposed, themselves cause increase of the dense deposits by which such plants are enabled to resist such strains."—S. V. CLEVENGER, *Chicago*.

ZOOLOGY.

Phymosoma.—A. E. Shipley has recently published his complete paper¹ on the anatomy of the West Indian geophyean *Phymosoma varians*. Above the mouth is the horseshoe-shaped lophophore, which bears a varying number (but always even) of tentacles; below is the vascular lower lip. Both lip and lophophore have a skeleton which gives attachment to the retractor muscles. The nervous system consists of a bilobed brain connected with the ectoderm within the lophophore. This gives rise to three pairs of nerves, one supplying the pigmented tissue of the region in front of the mouth, the second sending branches to the tentacles, while the third, sending a branch on either side of the oesophagus, unites below in the ventral nerve cord, which shows no traces of double origin, and which is not ganglionated. From it arises at intervals a single median nerve, which later divides

¹ *Quarterly Jour. Micros Sci.*, XXXI., p. 1, Apr., 1890.
Am. Nat.—June.—6.

and forms a circular nerve around the body. The circulatory system is closed. It consists of two plexuses, one in the lophophore, and the other in the lower lip. These are connected with a reservoir or dorsal tube lying on the œsophagus, and at the junction of reservoir and plexuses there is a large blood sinus almost completely surrounding the brain. The animals are dioecious, the generative organs occurring at the points of origin of the ventral retractors. Mr. Shipley thinks that the evidence presented by *Phymosoma* lends additional weight to the view that *Phoronis* should be regarded as related to the *Gephyrea inermia*.

Molluscs of the Albatross Explorations.²—The United States Fish Commission steamer *Albatross* made collections on her voyage from the Chesapeake through the Straits of Magellan and north to California. Mr. Dall has reported upon part of the molluscs. As might have been expected, the cruise resulted in many novelties and varieties in forms from depths of over one hundred fathoms. The account opens with an interesting discussion of the environments of deep sea life, and its effect upon the molluscan fauna. It is interesting to note that molluscs which belong to phytophagous groups are, from the absence of plant life in the deep sea, obliged to put up with a diet of Foraminifera, and as a result the digestive organs are greatly increased in calibre, the termination of the intestine prolonged beyond the body, so that the fæces are deposited away from the gills. Deep sea mollusc shells are remarkably free from those countersunk holes produced by the radula of carnivorous gastropods, a fact which leads the author to conclude that they do not live in perpetual conflict with each other; that the struggle is against environment rather than against molluscan enemies. The systematic portion begins with the brachiopods (why this association of brachiopods and molluscs?) and then follow acephals and gastropods. In the text are numerous interesting points, among them the fact that the embryos of *Scaphella magellanica* possesses a membranous protoconch, the existence of which explains the peculiar apex of the shell of the adult.

The Organs of *Bojanus* in the *Unionidæ*.—Dr. Walter M. Rankin has recently reinvestigated the structure of the organs of *Bojanus* in *Anodonta cygnea*.³ The organs are paired, the two being connected by a transverse tube. Each nephridium consists of four portions. A nephrostome leads from the pericardium into the anterior

² Proc. U. S. Nat. Mus., XII., 1889 [1890].

³ *Jenaische Zeitschrift*, XXIV., p. 227, 1890.

end of the glandular portion of the nephridium. This latter portion runs backward beneath the pericardium until it reaches the posterior adductor muscle. It then bends upward and enters a three-chambered portion lying in the angle between the pericardium and posterior adductor. From thence the organ runs forward parallel to the glandular portion, until, at about the level of the nephrostome, the ureter goes downward and outward to the exterior. The histological characters of the different portions are described. In returning from the different portions of the body the blood mostly enters the sinus venosus, but some goes directly to the chambered portion of the nephridium. That which enters the sinus can pass through numerous openings, so as to bathe the external surface of the nephridial cell-walls. By careful maceration with nitric acid, Dr. Rankin traced the nerve supply of the organ, and finds that it receives an anterior innervation from the cerebro-visceral commissures, and a posterior from the visceral ganglion. The question of the taking up of water is discussed. Dr. Rankin describes the valves in the course of the circulatory organs, and thinks that their position and mode of action is sufficient to explain all the phenomena of expansion of the foot, etc., without recourse to the absorption of water.

The Dorsal Papillæ of Nudibranchs.—Dr. W. A. Herdman enumerates⁴ three types of projections upon the dorsal surface of the Nudibranch molluscs. These are (1) the dorsal tentacles (*Rhinophoræ*); (2) the true branchiæ, and (3) the dorsal papillæ (*Cerata*). The last—*Cerata*—are regarded as outgrowths of the epipodial ridge, and frequently are considered as organs of respiration. They may be divided into those which contain diverticula of the liver (*hepatocerata*), and those which are mere outgrowths of the body wall (*parietocerata*). Dr. Herdman thinks that these *cerata* play at most but a moderate part in respiration, and thinks this is shown by the fact that they coëxist in many forms along with the true branchiæ, and that in all cases they contain no more numerous blood vascular spaces than does the adjacent skin. On the other hand, he regards them as protective either by causing the animal to resemble closely its surroundings, or, as in the case of *Eolis*, by making the animal conspicuous, and warning all fishes, etc., to let it alone because of the stinging organs in the *cerata*. These last are described and figured. The hepatic cæca extend a considerable distance into the tentacle, and then are continued directly into a “connecting tube,” which in turn opens into the cnidiphorous sac, which is evidently an invagination of

⁴ *Quart. Jour. Micros. Sci.*, XXXI., p. 41, 1890.

the ectoderm, containing numbers of large cells filled with thread cells. Herdman confirms the view, lately disputed, that the hepatic cæca are in communication with the exterior *via* the connecting tube and the external orifice of the cnidiphorous sac.

Zoological News.—General.—C. F. Marshall returns to the discussion of the histology of the muscle fibre.¹ After a discussion of some of the recent literature and a reply to Rollett's criticisms of the network theory, Marshall reaffirms his belief in the view that in rapidly contracting muscles (transversely striated) the portions differentiated to perform the contraction form a regular and highly modified intracellular network the longitudinal fibres of which produce the contractions, while the transverse meshes give the striated appearance to these muscles. He farther describes the development of the network in the trout and rat, and concludes that its transverse portions are directly connected with the muscle corpuscle, the longitudinal with the nerve end. The network develops first at the surface, and extends centripetally, and each muscle fibre appears to be developed from a single cell.

Worms.—*Chaetobranchus* is a new genus of Oligochætes described² by A. G. Bowman from fresh water of Madras. It is remarkable in having elongate processes (a pair to a segment) on the dorso-lateral portions of the body. These processes diminish in length from before backward, until at about the middle of the body they appear as mere warts upon the surface. As each contains a loop of the lateral blood-vessel as well as a diverticulum of the coelom (and some of the dorsal setæ) they are regarded as respiratory in function. Reproduction by fission was observed, but no budding zone was recognised.

Arthropoda.—A. D. Michael has been studying the variations in the female reproductive organs of Uropoda,³ a genus of Acarina. In these forms the ovipositor is replaced by a "vestibule" leading from the vagina to the exterior. This structure is quite complicated, and is surrounded by complex organs. In *U. ovalis* these structures are arranged so that during copulation the spermatozoa pass into the receptaculum seminis, but are prevented from entering the vagina, while later they may be forced into the latter organ. In *U. vegetans* the relations are much the same. In *U. krameri* the vestibule is adapted for stripping the shell from the egg at the time of laying, so that the larvæ emerge from the egg at the time of oviposition.

¹ *Quart. Jour. Micros. Sci.*, XXXI, p. 65, 1890.

² *Quart. Jour. Micros. Sci.*, XXXI, p. 83, 1890.

³ *Jour. Roy. Micros. Socy.*, April, 1890.

Mr. Cecil Warburton, in an interesting study ⁴ of the spinning habits of the spider *Epeira diademata*, comes to some conclusions at variance with those usually held. By entrapping spiders while spinning, and then studying the spinnerets with the lens, he finds that the line does not usually consist of many threads fused together, but ordinarily of two or four distinct threads. His paper is supplementary to and to a large part confirmative of a recent one by Apstein. Experimentation of the same kind is easily conducted, and will lead to interesting results.

Cœlom and Nephridia in Palæmon.—W. F. R. Weldon finds ¹ that shortly after injecting a one per cent. solution of indigo carmine into the tissues of the prawn, it will be found aggregated in the anterior portion of the thorax. He finds there a cephalothoracic sac extending from the gonad forward to the anterior end of the body, giving off at each anterior angle tubes which connect the organ with the green gland. The structure of this latter differs from Grobbin's account. From the above it appears probable that Weldon has here the long sought Arthropod cœlom, and the conclusive evidence that the green glands are true nephridia. The close connection of the gonad with the cœlomic sac is also suggestive. This goes far toward supporting the views of Lankester and Sedgwick that the cœlom and blood-vascular spaces of the Arthropods are distinct, and that the general perivisceral space of a crayfish or a grasshopper is not to be compared with the body cavity of an annelid or vertebrate.

Fishes.—The results of the deep sea dredging by the U. S. Fish Commission are now being published by the U. S. National Museum. The first paper is by Messers. Goode and Bean, and includes seventy new species. A list of all known deep sea fishes accompanies the description of these. Among the novelties is a new genus of Chimæridæ, which has an extremely elongate muzzle. There are many other interesting forms. The fishes collected by the steamer Albatross are the subject of a report by Prof. C. H. Gilbert. Ninety-six species of this list are new. They are mostly from the Pacific Ocean near the Galapagos Islands.

The expedition to explore the waters of the Valley of the Tennessee, sent by the U. S. Fish Commission under Prof. Jordan, have published their report. They found fourteen new species, the genus most largely represented by novelties being *Etheostoma*, of which the largest known species, *E. rex* Jord., was obtained. No exploration of this region has been made since that by Prof. Cope in 1869.

⁴ *Quart. Jour. Micros. Sci.*, XXXI, p. 29 1890.

¹ *Jour. Marine Biol. Assn.*, No. II., p. 162, 1869.

Reptiles.—Mr. Boulenger figures in the proceedings of the Zoological Society of London the *Python curtus* of Hubrecht, a species long overlooked, but which is widely distributed in Malaysia, continental and insular.

M. F. Bocourt describes and figures in the last number of *Mision Scientifique de Mexique* the Colubrine snakes of that country, including *Pityophis*, *Spilotes*, *Coluber*, etc. The plates are admirable.

Prof. E. D. Cope describes, in the late Proceedings of the U. S. National Museum, the reptiles and Batrachia obtained during the voyage of the U. S. Fish Commission steamer *Albatross* around S. America to the west coast of N. America. He rehabilitates the genera *Batrachyla* Bell, and *Nannophryne* Gthr., which were founded upon species from Patagonia, describes a new *Zachænus* from that country, and a new *Phyllodactylus* and *Tropidurus*, each from the Galapagos Islands. He shows that in *Tropidurus* it is the females that are more brilliantly colored than the males, contrary to the rule in the allied genera *Sceloporus* and *Liocephalus*. The colors are red, while in *Sceloporus* they are blue.

Mammalia.—In the Bulletin of the American Museum of Natural History of New York, Dr. E. A. Mearns, U. S. A., describes a number of new Mammalia from Arizona. They are as follows: *Sciurus hudsonius mogallonensis*, *Fiber zibethicus pallidus*, *Hesperomys leucopus arenicolus*; *Sigmodon hispidus arizonæ*; *Lepus allenii*; *L. melanotis*, *Dipodomys merianii*; *D. chapmanii*; and *Cynomys arizonensis*.

EMBRYOLOGY.

Prof. Weismann on the Transmission of Acquired Epilepsy.—The chief instance favoring the transmission of acquired characters which Prof. Weismann finds difficulty in explaining is evidently the series of experiments with reference to artificial epilepsy in guinea-pigs performed independently by Brown-Sequard and Obersteiner. I judge that Prof. Weismann himself regards this as the case presenting the greatest difficulties for his theory, since he has treated it in particular twice in the *Essays upon Heredity*, summarily in pages 81-82, and at length in pages 310-319, written in 1887, and also since he refers to it as "the only definite instance which has hitherto been brought forward in support of the transmission of acquired characters." (P. 319.) Prof. Weismann acknowledges the results of the experiments to be